NATURAL RESOURCES CONSERVATION SERVICE

CONSERVATION PRACTICE STANDARD

SILVOPASTURE ESTABLISHMENT

(Ac.)

CODE 381

DEFINITION

An agroforestry application establishing a combination of trees or shrubs and compatible forages on the same acreage.

PURPOSE

- Provide forage for livestock and the production of wood products.
- Increase carbon sequestration.
- Improve water quality.
- Reduce erosion.
- Enhance wildlife habitat.
- Reduce fire hazard.
- Provide shade for livestock.

CONDITIONS WHERE PRACTICE APPLIES

Situations where silvopasture establishment applies includes: 1) forest where forages can be added; 2) Land on which neither the desired trees nor forages exist in sufficient quantity to meet the land user's objectives.

This practice may be applied on any area that is suitable for the desired plants.

CRITERIA

General Criteria Applicable to All Purposes

This practice may be used in Wyoming only where there is an existing stand or areas with natural regeneration. Planting a new stand of trees for silvopasture is not recommended in Wyoming.

Tree species must be adapted to the site and compatible with planned livestock management.

Forage species must be adapted to the site and compatible with the planned management of the site.

For existing forests remove a sufficient number of trees and/or prune existing trees to allow adequate light penetration for forage establishment. Establishment of forage species will be in accordance with Pasture and Hayland Planting Standard 512 or Range Planting Standard 550.

Ensure adequate forage and tree cover to protect against soil erosion.

When using pesticides follow label recommendations and Pest Management Standard 595.

Only viable, high quality, and adapted planting stock or seed will be used.

The planting shall be done at a time and manner to insure survival and growth of selected species.

Tree/shrub spacing needs to exceed width of equipment to be used in management.

Additional Criteria to Provide Forage for Livestock and the Production of Forest.

The forage species must be identified as suitable for the targeted livestock.

Plant trees at an appropriate density to allow acceptable forage production and

wood products.

Additional Criteria to Increase Carbon Sequestration

For optimal carbon sequestration, select plants that have higher rates of sequestration and are adapted to the site to assure strong health and vigor.

Plant and manage the appropriate stocking rate for the site to maximize biomass production.

Additional Criteria to Improve Water Quality

Favor trees, shrubs and forages that have growth characteristics conducive to high nutrient uptake.

Additional Criteria to Enhance Wildlife Habitat

Establish forage species and understory shrubs that will provide forage, browse, seed, cover, or nesting habitat for the wildlife species of concern. For additional guidance refer to Wildlife Upland Habitat Management (645).

CONSIDERATIONS

Failure to maintain adequate forage for livestock may result in excessive tree damage and/or loss. Browsing of some conifer species, such as Ponderosa Pine, may cause abortion of calves. Consider deferring grazing until foliage of treated slash turns brown.

Consider adjusting the grazing regime periodically to cause enough disturbance to break up the allelopathic effect of decomposing needles.

Location and distribution of facilities for water, minerals, or supplemental feed should be such that livestock are not encouraged to over-utilize areas of silvopasture.

If grazing does not maintain reduced fuel loads, prescribed burning may be considered providing the woody plants are fire-adapted and will not be damaged.

Where water erosion and/or runoff from melting snow are a hazard, it should be controlled by supporting practices.

Wildlife should be considered when selecting tree or shrub species. Species diversity, including use of native species, should be considered.

Consideration should be given to adverse offsite effects.

Plants established in cropping systems should have root systems that have minimal impact on crop growth.

PLANS AND SPECIFICATIONS

Specifications for applying this practice shall be prepared for each site and recorded using approved specification sheets, job sheets, technical notes, and narrative statements in the conservation plan, or other acceptable documentation.

Provide a plan map and identify the tree and forage species to be established or managed.

OPERATION AND MAINTENANCE

The following actions shall be carried out to insure that this practice functions as intended throughout its expected life. These actions include normal repetitive activities in the application and use of the practice (operation), and repair and upkeep of the practice (maintenance):

- Forage and forest management will follow Prescribed Grazing 528 and Forest Stand Improvement 666 Standards.
- Competing vegetation will be controlled until the trees are established.
- Periodic applications of nutrients may be needed for establishment and to maintain plant vigor. Refer to Nutrient Management Standard 590 for further guidance.
- Inspect trees and shrubs periodically and protect from adverse impacts

including insects, diseases or competing vegetation. The trees or shrubs will also be protected from wildfire and damage from livestock and wildlife.

Practice Service Life: 10 years

REFERENCES

Burner, D.M. 2003. Influence of alley crop environment on orchardgrass and tall fescue herbage. Agron. J. 95: 1163-1171.

Clason, T.R. and S.H. Sharrow. 2000. Silvopastoral practices. Ch. 5 in *North American Agroforestry: An Integrated Science and Practice*. American Society of Agronomy, Madison, WI.

Clason, T.R. and J.L. Robinson. 2000. From a pasture to a silvopasture system. USDA, NAC. Agroforestry Note 22.

Clason, T.R. and J.L. Robinson. 2000. From a pine forest to a silvopasture system. USDA NAC Agroforestry Note 18.

Cutter, B.E., K. Hunt and J.D. Haywood. 1999. Tree/wood quality in slash pine following long-term cattle grazing. Agroforestry Systems 44:305-312.

Fike, J.H., etal. 2004. Considerations for establishing and managing silvopastures. Plant Management Network. 1-12.

Lehmkuhler, J.W., etal. 2003. Tree protection methods during the silvopastoral-system establishment in Midwestern USA: cattle performance and tree damage. Agroforestry Systems 59: 35-42.

Lewis, C.E., etal. 1983. Integration of pines, pastures and cattle in south Georgia, USA. Agroforestry Systems. 1:277-297.

Sharrow, S.H. and I. Syed. 2004. Carbon and nitrogen storage in agroforests, tree plantations and pastures in western Oregon, USA. Agroforestry Systems 60:123-130.